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the gross anatomy was almost exclusively meant by the term anatomy of the central nervous system, and to this gross anatomy there was now and then added a little on the tracts in the cord, and the description of one or two frontal sections of the brain and cord. Beyond this, the descriptions applied mainly to the surface of the organs, though not uncommonly something on the development of the brain was appended. Such a presentation of the subject answered the purpose very well when the anatomy of the central nervous system was but little developed. To-day, however, it has left this earlier condition far behind. The student wants to know, and must know, the finer anatomy of these organs, and the gross anatomy should be presented only in so far as the parts described and the names given are found to be really significant in the light of existing facts. For example, a clear idea of the arrangement of the parts about the lateral ventricles and the interbrain cannot be gotten unless the development of the brain is most carefully considered, and the changes from the primary to the secondary conditions are traced in ample detail. It is on such a knowledge only that a good understanding of the finer anatomy of this region can rest, and the same is essentially true for all the other regions of the nervous centres. Supposing these views to be correct, then a modern discussion of the anatomy of the central nervous system should contain somewhere in it a careful account of the embryology of the brain and cord, as a necessary corner-stone.

Whitaker's book does not recognize this aspect of the case, for its discussion of the embryology is very casual, and it goes along as though there was very little outside of its covers, although the allusions to the finer anatomy are scanty and often antiquated. Looked at in another way, however, it is a handy volume, containing rather more than one gets in the brain and cord chapters in the anatomical text-books, and the order of presentation is good. There are numerous plates, some of them original, the one showing the distribution of the tracts of the cord being specially useful. A very good feature, too, is the tabular arrangement, showing in a general way the representation of the parts seen in one cross-section in the section at another level. As may therefore be seen, the book will be useful where the gross anatomy of the brain and cord is to be studied, but for purposes beyond this its value is limited.

Annual of the Universal Medical Sciences. Edited by C. E. SAJOURS, M. D., and seventy associate editors. Issue of 1888, 5 volumes. F. A. Davis, Philadelphia and London.

An annual review of the progress of the medical sciences that fills five volumes, more than 2500 pages, and is liberally illustrated, certainly calls for remark. According to the preface, the interest of the Annual is in clinical data, and it is designed to be specially useful to the medical practitioner. Since through the chief editor it is intimately connected with the Jefferson Medical College in Philadelphia, one is not surprised to see that a large number of the articles are from men residing in that city, more than half the number of associate editors being Philadelphians. The articles are grouped under some seventy heads. They are not arranged always in the order which might be anticipated, but this is explained by the very limited time in which the work was put through the press. The work is more than a year-book in its plan, for many of the

articles are really short treatises, with a few references to the literature of 1887 put in at the appropriate points of the discussion. This gives it the value, in many cases, of a reference handbook. Such a work must of necessity be selective. It cannot review everything, and in this case we find about 2000 titles are referred to, the majority of these being for the year 1887, although they are not all within that limit.

The index of authors for 1887 as it appears in the *Index Medicus* includes something over 12,000 names. It is plain, therefore, that but a fraction of the literature is discussed, but at the same time it is only fair to suppose that the fraction in question has been selected as being that of greatest value.

One noticeable feature is the large corps of correspondents situated in all parts of the world, many of them in remote regions, who are expected to report on medical matters in their neighborhood. Such a plan, if carried out, must naturally lead to the accumulation of valuable clinical data.

In connection with the *Annual* there is also published, under the same auspices, a small quarterly journal bearing the title of *The Satellite* [of the *Annual*, etc.], the aim of which is to review the most important articles in the medical press at large. The first number of this journal appeared more than half a year before the *Annual* itself.

The impression that these two associated publications leave is not one of satisfaction. We are not speaking now of the individual communications, but of the book as a whole, indicating as it must a tendency.

For those who are exceedingly busy with such occupations as do not permit much time for reading, or for those who are remote from libraries, the *Annual* fills a gap, and as the numbers in both these classes are numerous, it may expect to be well received. The student and investigator will probably continue, on the other hand, to use the *Index Medicus* for the literature, the *Centralblätter* for the analysis of the current literature, and the various special year-books in which the articles reported are separately analysed, for getting a general view of advances made in former years.

The best articles in the *Annual* cannot fail to be both instructive and interesting to the reader, as giving the connected views of good authorities, but they furnish him in their present form with very little first-hand material on which he can form judgments for himself. This point of view would be admitted, we are sure, by no one more readily than by the writers of the articles themselves. In our opinion, then, the *Annual* is but a slight addition to the force of working books on which the student depends. It is with interest that one awaits the development of the issue for 1889, for so much of the present volumes is necessarily standard matter elaborated in order to show the precise relations of the advances of the year, that it is not easy to see how it can be repeated in a subsequent issue without losing freshness, and if it is not repeated in some measure, the narrative style in which the articles are now written will be maintained only with difficulty.

Turning now to some of the articles which relate to the nervous system, the first volume opens with the discussion of "The Diseases of the Brain and Spinal Cord," by Dr. E. C. Seguin. In treating here of the advances made in the localization of function in the human brain, the author thinks that comparative physiology can

claim but very little credit for the present results, and that the same method which led Broca and Hughlings Jackson to locate their respective centres would have given us all the information which we now possess about centres, quite independent of the fact whether animals were or were not studied. That the details of the human brain are to be made out from the study of the human brain alone is a point that will probably be admitted on all hands; but that we should be where we are now in cerebral anatomy and surgery, without the study of the brain in lower forms, is by no means to be readily admitted when we compare the advances in the period which elapsed between Broca's observation and the fundamental experiment of Fritsch and Hitzig, with those in the same number of years following the latter.

The second volume opens with an account of the surgery of the brain and nerves, by Dr. N. Senn, in which the modern surgical methods as applied to the brain are detailed.

In the fifth volume Dr. Spitzka gives fifteen pages to the anatomy of the brain. A number of the papers which form the basis of this article have been given in abstract in this journal during the past year, but others have not been mentioned. In discussing the paper of Adamkiewicz on the circulation in the ganglion cell, and the observation of Fritsch that blood-vessels are found within the protoplasm of the giant cells in *Lophius piscatorius*, Spitzka seems a little hasty in saying that observations have been made which entirely dispose of the old view that the ganglionic element is the equivalent of a simple cell. In the first place, the observations of Fritsch have little in common with those of Adamkiewicz, and it is hardly fair to class the two together; and in the second place, if our notion of the simple cell is to be disturbed by finding some other structure in its protoplasm, it should long ago have been upset by finding intracellular nerve terminations and the nephridia, etc., which are intracellular in the invertebrates. Most interesting are Spitzka's own observations on the cetacean brain, in which all the parts connected with the auditory nerve are found in such a hypertrophic state on so comparatively simple a background, that it affords not only much evidence in favor of views derived from the study of animals less suited to show these points, but stands as one of the most striking contributions of the comparative method to the finer anatomy of the brain.

At the meeting of the Congress of American Physicians and Surgeons held at Washington, September 18-20, 1888, neurological matters had much attention even outside of the discussions in several societies. On the evening of September 19th there was a general discussion of localization in the brain with special reference to brain surgery. The papers of the evening were unusually satisfactory, but any special mention of them must be omitted here, because of their rather practical character. The general sentiment appeared to be that surgical interference with the brain was now attended with comparatively so little danger from the side of the operation that there might be too much surgery, and the more conservative speakers added a word of caution on this head. The remarks of Mr. Victor Horsley on an investigation which he had made in connection with Mr. Gotch, on the stimulation of the cerebral cortex in monkeys, was an experimental contribution which can perhaps be summarized.

In an attack of Jacksonian epilepsy there is first a tonic followed by a number of clonic spasms. It is known that the initial discharge takes place from the cortex, and therefore the tonic spasm is of cortical origin, but the question still remained as to the origin of the clonic spasms. These might arise either by separate discharges from the cortex, or by a rhythmical discharge of the spinal centres consequent upon a single stimulus from the cortex. Relying on the fact that each separate impulse as it passes along a nerve gives rise to a negative variation of the resting nerve current, then, if it were possible to tap the pyramidal tract above the spinal centre while the cortex was being stimulated, and examine the negative variations, it would be seen whether a series of impulses were coming from the cortex at the proper rate to account for the clonic muscular contractions. In the first place, the authors succeeded in so operating on the spinal cord in the monkey that it could be kept alive and suitable for study for nearly half an hour. With non-polarizable electrodes, they then led off the resting nerve current from the cut and longitudinal surfaces of the pyramidal tract to a capillary electrometer—a capillary tube containing a column of mercury, the height of which varies with slight variations in the electrical tension. So delicate is this instrument that it responds quite satisfactorily to variation in the nerve current by a change in the position of the mercury in the tube. The amount of this change is magnified by viewing it through a microscope. In these experiments the oscillations of the mercury were recorded photographically.

Stimulation of the cortex in the leg area gave rise to a prolonged negative variation corresponding to the tonic period; then, on the removal of the electrodes from the cortex, there followed a series of variations corresponding perfectly to the clonic period of the muscular disturbance. The origin of the clonic contractions is therefore cortical. That the result is not due to a diffused disturbance in the cord is shown by the fact that if the electrometer be undisturbed and the arm centre in the cortex be stimulated, there is no evidence of any electrical variation. An attempt to tap the motor nerve roots and test the negative variations there led to no results, the disturbance being too slight to affect the electrometer. The results in this case are highly interesting, but hardly less interesting are the several very refined methods of operation and observation by which these results were obtained.

A Comparison of the Latency Periods of the Ocular Muscles on Excitation of the Frontal and Occipito-temporal Regions of the Brain. E. A. SCHAEFER. Received February 13, 1888. Proc. Roy. Soc. Vol. 43.

The very condensed statement which the author makes of these experiments cannot be further abstracted without some important omissions. We give, however, his main points. The conjugate deviation of the eyes to the opposite side is produced by the excitation of entirely different regions of the cerebral cortex. The parts which, when electrically excited, produce this movement, are: 1, an area included in the motor or psychomotor zone of the authors; 2, the sup. temporal gyrus; 3, the upper end of the middle temporal gyrus; 4, the post. limb of the angular gyrus; 5, the whole cortex of the occipital lobe, including its mesial and under surfaces; 6, the quadrate lobule. Of these parts, the frontal area is distinguished